

3DGS-SPET: Incorporating 3D Gaussian Splatting for Spacecraft Pose Estimation and Tracking Based on Monocular Vision (Supplementary Materia)

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In the supplementary materials, we provide additional visualizations of single-frame pose estimation and consecutive-frame pose tracking. The evaluated image sequences are RT519, RT539, RT559, RT579, and RT599. Fig. S1 presents the qualitative results of single-frame pose estimation for the proposed method and the comparison methods. Fig. S2 visualizes the error results of the proposed 3DGS-SPN method for pose tracking on consecutive frames. For the video of pose tracking visualization, please download from https://drive.google.com/file/d/1fjRpKm-XvrkuvEF29_QlvCWKStn-nBr4/view?usp=drive_link.

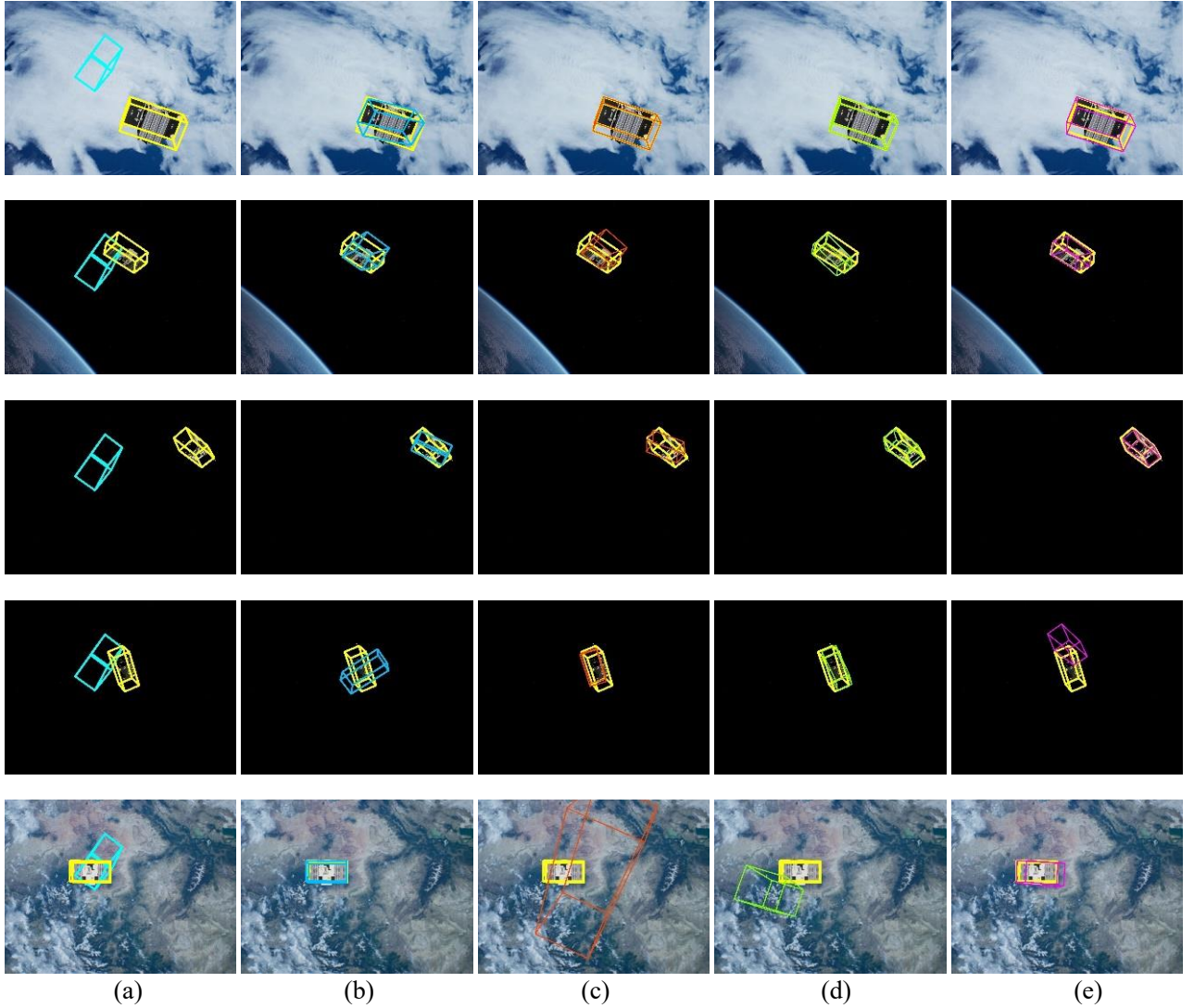


Fig. S1. Visualization of comparison results for five methods on the SPARK2024 pose estimation dataset, with yellow indicating ground truth bounding boxes. The image sequence from top to bottom is RT519, RT539, RT559, RT579, RT599. (a) Mobile-URSONet, (b) Gen6D, (c) Onepose, (d) Onepose++, (e) 3DGS-SPET.

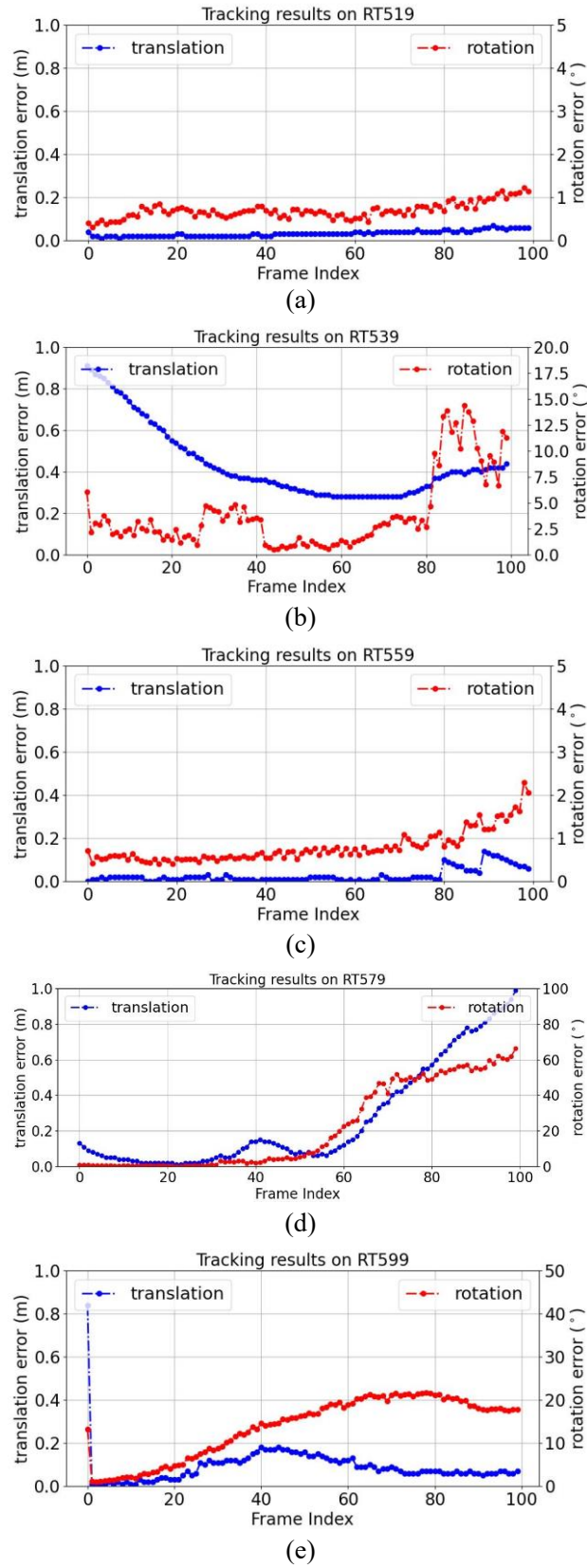


Fig. S2. Visualization of tracking errors for the proposed 3DGS-SPET method on the SPARK2024 dataset. The horizontal axis represents the time step, while the vertical axes show the translation error (m) and rotation error ($^{\circ}$), respectively. The tracked image sequences are (a) RT519, (b) RT539, (c) RT559, (d) RT579, and (e) RT599.